

**REMARKS**

These amendment and remarks are filed in response to the rejection mailed July 24, 2006. For the following reasons, this application should be allowed and the application passed to issue.

No new matter is introduced by this amendment. The amendment to claim 3 is supported by claim 1.

Claims 1-5 are pending in this application. Claims 1-5 have been rejected. Claim 3 has been amended in this response.

***Claim Rejections Under 35 U.S.C. § 103***

Claims 1, 2 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nobuaki (JP 3-297063). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 1, is a positive electrode current collector for a manganese dry battery comprising a carbon rod, and paraffin wax containing a hydrocarbon compound having a molecular weight of 300 to 500 impregnated in the carbon rod. The paraffin wax contains a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%.

The Examiner asserted that Nobuaki discloses a dipping treatment for a carbon rod in a manganese dry cell. Nobuaki teaches paraffin wax with a molecular weight of 300 to 500 or a micro-wax consisting of isoparaffin and cycloparaffin with a molecular weight of 35 to 60. Acknowledging that Nobuaki does not disclose that the paraffin wax contains hydrocarbon compounds having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt.%, the Examiner alleged that Nobuaki recognizes that variations in the weight percentage

of the lower molecular weight of hydrocarbons will vary the viscosity of the wax and in turn effect impregnation of the wax. Thus, the Examiner concluded that the claimed value would have been obvious because discovering the optimum value only involves routine skill in the art.

Nobuaki, however, does not suggest that the paraffin wax contains hydrocarbon compounds having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt.%, as required by claim 1.

Obviousness can be established only by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); *In re Fine*, F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). There is no suggestion in Nobuaki to modify the positive electrode current collector of Nobuaki so that it contains a paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%, as required by claim 1.

The only teaching of a paraffin wax containing a hydrocarbon compound having a molecular weight of 300 to 500 impregnated in said carbon rod, the paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%, is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The motivation for modifying the prior art must come from the prior art and must be based on facts.

Although the Examiner alleged that Nobuaki recognizes that variations in the weight percentage of the lower molecular weight of hydrocarbons will vary the viscosity of the wax and in turn effect impregnation of the wax, the Examiner's conclusion lacks the requisite factual support. The Examiner's retrospective assessment of the claimed invention and use of unsupported conclusory statements are not legally sufficient to generate a case of prima facie obviousness. The motivation for modifying the prior art must come from the prior art and must be based on facts. The Examiner is not free to ignore the judicial requirement for **facts**. To do so is legal error. *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002).

The present claims are further distinguishable over Nobuaki because Nobuaki does not suggest the unexpected results, *e.g.* - improved discharge capacity after high temperature storage obtained when paraffin wax with the claimed molecular weight is impregnated in the carbon rod, as shown in Table 3 (specification at page 12).

It is noted that the Examiner simply discounted the features of the present invention by asserting that "it would have been obvious to choose the instantly claimed value through process optimization" and "that discovering the optimum or workable values involve only routine skill in the art" Accordingly, though the Examiner admits Nobuaki does not disclose these features, the Examiner alleged that they would have been obvious based on process optimization. However, it is respectfully submitted that the Examiner's reliance on routine skill in the art to allege obviousness of the claimed features is in legal error. The "process optimization" basis for an obviousness rejection can only be relied upon by the Examiner if the *prior art* first recognizes the modified parameter as a result-effective variable. In the instant case, only Applicant has recognized and considered the importance of the claimed parameter (*e.g.*, amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310), as

a result-effective variable, so that the Examiner can not rely on the obviousness-theory of "process optimization" as a basis for asserting obviousness thereof.

The Examiner is directed to MPEP § 2144.05(II)(B) under the heading "Only Result-Effective Variables Can Be Optimized", which sets forth the applicable standard for determining result-effective variables:

A particular parameter must first ***be recognized*** as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. (citing *In re Antonie*, 195 USPQ 6 (CCPA 1977)) (emphasis added).

In the instant case, the cited prior art appears to be completely silent regarding amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310, as achieving a recognized result; so that there is no basis for alleging obviousness thereof based on process optimization. Accordingly, it is respectfully submitted that the claimed features would not have been obvious in view of Nobuaki because the cited prior art does not appear to recognize the claimed parameters, **in the particular structure set forth in the claims**, as achieving a recognized result.

Specifically, Nobuaki fails to satisfy the legal requirement for the prior art to first recognize the amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310, in the claimed structure, as a result-effective variable. Namely, Nobuaki is silent as to amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 achieving a recognized result. Accordingly, the cited prior art does not support the Examiner's allegation that the optimum values of the parameter can be characterized as process optimization.

Moreover, the features of the present invention recited in claim 1 provide **new and unexpected results** in relation to improved discharge capacity after high temperature storage obtained when paraffin wax with the claimed molecular weight is impregnated in the carbon rod, as described in the present specification. Only Applicant has recognized and considered the parameter (e.g., the amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310) in relation to discharge performance of manganese dry batteries to achieve the disclosed results described in Applicant's specification. Nobuaki is completely silent as to the improvement in discharge performance achieved by the present invention, and does not enable process optimization of the claimed parameter.

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nobuaki in view of Yukifumi et al. (JP 7-272702). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the present invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 3, is a positive electrode current collector for a manganese dry battery comprising a carbon rod, and paraffin wax containing a hydrocarbon compound having a molecular weight of 300 to 500 impregnated in the carbon rod. The paraffin wax contains a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%. The carbon rod has a density of 1.50 to 1.75 g/cm<sup>3</sup>.

The Examiner averred that Nobuaki substantially discloses the claim elements but does not teach the density of the carbon rod. The Examiner alleged that Yukifumi et al. disclose that a carbon rod of high density is used so that it is hard and cushioning is not a consideration. The Examiner concluded that the claimed carbon rod density would have been obvious because discovering the optimum value only involves routine skill in the art.

The combination of Nobuaki and Yukifumi et al. do not suggest the claimed positive electrode current collector because neither Nobuaki nor Yukifumi et al. suggest paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%, and a carbon rod with a density of 1.50 to 1.75 g/cm<sup>3</sup>, as required by claim 3.

There is no suggestion in Nobuaki and Yukifumi et al. to substitute a paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%, and a carbon rod with a density of 1.50 to 1.75 g/cm<sup>3</sup> into the positive electrode current collector of Nobuaki.

The only teaching of a positive electrode current collector comprising a paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt%, and a carbon rod with a density of 1.50 to 1.75 g/cm<sup>3</sup>, is found in Applicant's disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. The motivation for modifying the prior art must come from the prior art and must be based on facts.

Although the Examiner alleged that Yukifumi et al. discloses the carbon rod with a density of 1.50 to 1.75 g/cm<sup>3</sup>, the Examiner's conclusion lacks the requisite factual support. The Examiner's retrospective assessment of the claimed invention and use of unsupported conclusory statements are not legally sufficient to generate a case of prima facie obviousness. The motivation for modifying the prior art must come from the prior art and must be based on facts. The Examiner is not free to ignore the judicial requirement for **facts**. To do so is legal error.

The present claims are further distinguishable over Nobuaki and Yukifumi et al. because Yukifumi et al. do not suggest the unexpected results, *e.g.* - improved discharge capacity after high temperature storage obtained when paraffin wax with the claimed molecular weight is impregnated in the carbon rod, as shown in Table 3 (specification at page 12).

It is noted that the Examiner simply discounted the features of the present invention by asserting that "it would have been obvious to choose the instantly claimed value through process optimization" and "that discovering the optimum or workable values involve only routine skill in the art" However, it is respectfully submitted that the Examiner's reliance on routine skill in the art to allege obviousness of the claimed features is in legal error. The "process optimization" basis for an obviousness rejection can only be relied upon by the Examiner if the *prior art* first recognizes the modified parameter as a result-effective variable. In the instant case, only Applicant has recognized and considered the importance of the claimed parameter (*e.g.*, amount of paraffin wax containing a hydrocarbon compound having a molecular weight of not greater than 310 and the carbon rod density), as result-effective variables, so that the Examiner can not rely on the obviousness-theory of "process optimization" as a basis for asserting obviousness thereof.

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nobuaki in view of Yukifumi et al. and further in view of Kenichi et al. (JP 5-290820). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The Examiner averred that Nobuaki and Yukifumi et al. substantially disclose the claim elements but do not teach the polybutene sealant. The Examiner alleged that Kenichi et al. disclose a polybutene sealant and that it would have been obvious to incorporate a polybutene sealant into the manganese dry cell of Nobuaki and Yukifumi et al. to prevent liquid leakage.

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The combination of Nobuaki, and Yukifumi et al., and Kenichi et al., however, do not suggest the claimed manganese dry battery because Kenichi et al. do not cure the deficiencies of Nobuaki and Yukifumi et al. Kenichi et al. do not suggest that the paraffin wax contains hydrocarbon compounds having a molecular weight of not greater than 310 in an amount of not greater than 0.5 wt.%, as required by claims 1 and 3. Thus, claim 5 is allowable for at least the same reasons as claims 1 and 3.

In addition, the Examiner's erroneous conclusion that claim 2 is a product-by-process claim is traversed. Claim 2 does not recite a method of forming the positive electrode current collector. Thus, claim 2 is not a product-by-process claim.

The dependent claims are allowable for at least the same reasons as the respective independent claims from which they depend, and further distinguish the claimed positive electrode current collector.

In view of the above amendments and remarks, Applicant submits that this case should be allowed and passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.



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To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



Bernard P. Codd

Registration No. 46,429

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
Phone: 202.756.8000 BPC:MWE  
Facsimile: 202.756.8087  
**Date: October 23, 2006**

**Please recognize our Customer No. 20277  
as our correspondence address.**